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A multidisciplinary design studio: designing an eco-house project on Burgazada, Istanbul

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Abstract

This paper describes collaboration among Architecture, Arts, Mathematic and Ecology. A problematic of design titled *Designing an Eco-House Project on Burgazada, Istanbul* with taking references from abstract paintings of Miro and Kandisky and using the complex geometrical forms, which are formed by compositions of triangles, octagons and hexagons, etc. was given to students on the Design Studio 1 of the Department of Architecture of Yildiz Technical University. Burgazada, one of the Prince's Islands of Istanbul, with an almost 2500-years old history, was chosen as the project site. The project process has been continued during the 15 weeks long spring semester of 2012-2013 education year. The project involved designing of a lightweight structure on an ecological house design, which gives minimum damage to the ground and the ecology. The aim of the studio was to create an innovative, interdisciplinary eco-house, which takes references from selected abstract paintings of Miro and Kandisky for students to creatively solve design problems in a SPRİNG semester time period.

Thus, the paper will have not only the process of A Multidisciplinary Design Studio, but also different design solutions of *Designing An Eco-House Project on Burgazada*, Istanbul.

Keywords: Miro, Kandinsky, ecology, design, architecture, creative thinking, thinking creatively

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1. Introduction

It is a common way to give some general design problems such as a design of a house or a design of a one-storey office building to first years' architecture students on design studios on a classical education point of view, till today. For the first year of the architectural education students are generally designing buildings that are having small unit spaces, which are created according to the function of that is asked to design. Generally, all of the spaces are like they are from the pages of the book of Neufert, which is used to check dimensions, ratio and proportions in architecture. So almost all of the projects of the group are so similar to each other without having any sense of creation, but with perfectly right architectural fictions on plans and sections, thus they are so good according to the "book".

To solve this main problem, one instructor and one assistant guided 15 architecture students from Turkey, Syria and Spain on the design studio during 15 weeks long spring semester of 2012-2013, used Jeffrey and Craft's *teaching for creativity- teaching creatively theory* to ask an architectural creation of eco-houses on Burgazada to the group. Each student selected a site on Burgazada. And started to create their own *dream eco-house*.

The design of the house should have a lightweight structure, which was not only to be ecologically utilitarian, but also give less harm to the ground it would rest upon. Choosing one abstract painting of either Miro or Kandinsky was the starting point of the project in the first moment, just after a workshop had been organized on the attendance of a famous Turkish painter, Aysun Dostol. She gave 3 seminars titled, *The Information of Paintings of Mirao & Kandinsky and Their Era*; *Dadaism*; and *Making of Collages*. Then, she held a workshop of 3 dimensional modeling collages with references from the paintings of Miro and Kandinsky.

Thus, the process was including 4 pahases chronologically: 1.the creating of 3 dimensional innovative collages from the paintings of Miro or Kandisky during a workshop with a professional Turkish painter; 2.the giving decisions of having ecological point of view on the house design, 3.creating polygonal structural choice as having references from selected painting either of Miro or Kandisky, and finally 4.the design process of the project. Moreover then this, during 15 weeks long semester, informative seminars about the site were given to the students on the first 2 weeks, and from the 3rd week to 10th, not only three basic digital programs, which are chronologically photo-shop for architectural representation, sketch up for understanding 3 dimensional modeling quickly and auto-cad for drawing the design project, were touch to students on three different workshops, but also 3 seminars about eco-design, 2 about architectural patterns and geometrical form creating and 1 about light-weight structures were given to them, as well.

2. Methodology

On modern educational programs there are 2 main methods. One is offered by Kolb (1984) and named as an *experimental learning*, and is offered by Jeffrey and Craft (2004), which is called as a *teaching for creativity- teaching creatively*. Here, the second one was chosen and design projects were created according to the references of the paintings of Miro or Kandinsky on an artistic point of view, which is pointed out by the related theory.

According to Jeffrey and Craft (2004), the former is defined as 'using imaginative approaches to make learning more interesting and effective' (Craft, 89) and *teaching for creativity* involves *teaching creatively* (Craft, 90) and notes that, "young people's creative abilities are most likely to be developed in an atmosphere in which the teacher's creative abilities are properly engaged" (Craft, 90).

There is a great deal of research and conceptual analysis, on an architectural education parallel to the researches and developments on educational field, which has explored aspects of pedagogical approaches which foster pupil creativity around the world especially on USA. (Torrance, 1984; Shallcross, 1981; Kessler, 2000; Hubbard, 1996, Halliwell, 1993; Fryer, 1996; Edwards and Springate, 1995; Craft, 2000; Beetlestone, 1998; Balke, 1997). However, none of these studies has, examined the relationship between these two facets of creativity not only in the university, but also on architectural education.

The data, which was drawn upon by Jeffrey and Craft (2004) comes from a research of 1971 and is now internationally famous with reciprocal connections with schools in Sweden, relations with communities in Gambia and the recently retired head teacher has lectured in the United States and recently visited China.

On their example, data collection was through qualitative methods, consisting chiefly of interviews with teachers, support workers, students and families. The research focused on the learners' experience of creative teaching in general, focusing on their perspectives, recorded through extensive field notes. Relevant documentation was collected such as governors' and inspectors' reports, timetables, and test results. Photographs were used extensively as data and as stimuli for exploring children's[2] perspectives. At one stage, students were given cameras to select their own observations for discussion. By comparing the various different kinds of data, both within and across cases, we were able to identify prominent issues and themes connected to the major subject of creativity in education and the effect this had on the various participants.

Thus, a kind of similar method was used on first year's design studio students. Each student selected a site on Burgazada and then not only by taking the reference paintings of Miro or Kandinsky, but also with the results of the eco-researches that they made, they designed their projects.

3. Teaching Creatively And Teaching For Creativity

The relationship between *teaching creatively* and *teaching for creativity* can be seen by using a framework based on Woods' (1990) features of creative teaching - relevance, ownership, control and innovation.

3.1. Teaching Creatively

According to NACCCE (1999) report, imaginative approaches should be used to make learning interesting and effective during the semester for teaching creatively. A major effect for students was an immediate experience of the dynamic, appreciative, captivating and caring ethos (Jeffrey and Woods, 2003). The

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[2] The group of students are from priliminary school, which were selected as group members on Jeffrey and Craft's example).

construction of this type of ethos has many 4 objectives but in terms of teaching and learning one of the school's major aims was to make the learning experience relevant to learners, to make it interesting. According to Jeffrey and Craft for students this meant an ethos that was dynamic and active:

Learners appreciated the qualitative aspects of each focus of learning. Thus, creating is also made exciting, literacy experienced as a whole range of delights and emotional journeys through designing and architecture is developed as a passion for designing, discovery and experimentation are felt during the process of technology provided intensely focused activity involving, frustration and satisfaction and the arts were valued as opportunities for expression, as well.

During the students are formulating their curriculums, the knowledge to be investigated on the process and the contexts in which not only teaching and learning took place, but also personal creativity was tired to be pushed up to set a framework for creative engagement on their projects.

The group experienced the process between studio hours as adventures just on the example of Jeffrey and Craft. The lecture's '*hands on*' approach was a paramount feature of learning to make design relevant and encouraging ownership:

The group was told the story of how the practice of 'designing a eco-house on an island site' developed - the setting up the parish boundaries on the first year's architecture students.

The instructor and the assistant of the lecture prioritised strategies that engaged the learner[3] and they acted creatively to adapt the strategies to the appropriate age range, context and individual. The focus was on the professional relevance of the design studio to the first year students as showing what was the architectural background of a design, which was to be learnt or experienced during 15weeks long semester. This is related with the exemplified the description of teaching creatively which was given by NACCCE, in 1999.

3.2. Teaching For Creativity

The instructor also enacted those *teaching for creativity* principles according to (NACCCE, 1999), as follows: encouraging the group to believe in their creative identity; identifying the group creative abilities not only architecturally, but also related with art; fostering creativity by developing some of the common capacities and sensitivities of creativity such as curiosity, recognising and becoming more knowledgeable about the creative processes that help foster creativity development and providing opportunities to be creative. This was done by firstly having 4 weeks long teaching of the history of Ottoman architecture and encouraging ownership of learning and then by passing back control to the learner and encouraging by making students' own movies as innovative contributions. Control of learning by a young person is not a new experience (Pollard 1996). Being on this process is an opportunity to have ideas, which are innovative and expressive.

One of the major characteristics of creativity itself is, as craft argue on 2002 possibility thinking (Craft, 2002) and it was referred also that it was used at the education in technology-based activities on the group of upper-graduate students such as on this example, movie making to encourage the group to take control and act innovatively, as well.

According to Wood and Jeffrey (1996), the group experience and imagination would be a major part of

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[3] Here, upper-graduate students.

the process of investigating knowledge using such devices as possibility knowledge (Woods and Jeffrey, 1996) and possibility thinking (Craft, 2002) and according to Lucas (2001), as well. *Teaching for creativity* could involve generating 'learner inclusive' pedagogy, according to Jeffrey and Craft where the learner is encouraged to engage in identifying and exploring knowledge. This idea is tried to develop further here, on this selected group of upper-graduate architecture students (Craft and Jeffrey, in press; Craft, 2003).

3. Content And Context Of The Lecture

The 15 weeks long semester had 5 different educational phases,

1. Site seeing on Burgazada;

2. Choosing of the sites of students on Burgazada;

3. Having 2 seminars about ecological design, landscape architecture and eco-details on the house;

4. Designing an eco-house by taking references of Miro and Kandinsky;
4a. Having 3 seminars about paintings of Miro and Kandinsky and Dadaism and collage making,
4b. Organising of a 3 dimensional collage workshop (taking the reference of 1 painting of either Miro or Kandinsky)[4]

5.Design Process:
5a. Designing of plans and elevations,
5b. Taking sections,
5c. Designing of ecological details
5d. Creating of details of interior design
5e. Creating of details of landscape

6. Making presentations on the auditorium;

7. Discussions of each project on final jury.

5. Projects And Discussions

There were 15 submitted projects from the group: 9 took the reference of paintings of Kandinsky and 6 took the reference of paintings of Miro. **4 of the students** of the group who selected Kandinsky's paintings as references designed their spaces as some rectangular shapes that have some cross points with the other ones on different sizes on different directions. And they tried to catch all artistic sense of humour on the design of this cross points on their eco-houses. They used light weighted steel in structure and on their landscape design they again selected to use rectangular forms to have the main axes, thus their designs have an intensive harmony with the design of their *dream eco-house*.

6 students, who selected Miro's paintings as their designs reference points, designed their dream eco-houses as a festival of using the complex geometrical forms, which are formed by compositions of triangles, octagons and hexagons, etc. not only on plans, but also on the 3rd dimensional structure design, as well. Even the details of the interior design and furniture design of these eco-houses have the same architectural creation point

[4] Each student chose his/ her reference painting & painter according to his/ her point of view.

of view. The landscape design of these 6 projects has complex axes, more than having straight lines, the idea of creating landscape design has a dynamic fluid structure and framework combinations.

5 students of the group selected to use the paintings of Kandinsky as the starting reference of the design of their *dream eco-house*. These students used a combination of complex geometrical forms with the simple rectangles, not only on their dream eco-house, but also on the design of the landscape, as well. Each of their house projects is unique in shape, not only on 2 dimensions of plans, but also on the 3rd dimension, as well. The landscape architectural point of view of these projects has harmony with the design idea as having small useful units on the gardens as daily spaces, swimming pools, romantic small draw wells, and etc. one project of this group is like *a drop of water*, very much effected with the fluidity idea of Zaha Hadid, who is a famous architect with her contemporary architectural examples on all over the world. That idea has came to actualize after having some drop like intersectional points on the 3 dimensional collage of the owner of the project, which also has a parallelism with the idea of designing an eco-house on the ecological point of view.

Three best project designs are as follows:

1. *A Harmony of Triangles on Our Life*, by Muhittin Eksi

The design idea is related with the triangles that we have on our life; everything that is related with our life, such as school-family-work, love-faith-hope, eat-drink- sleep, sea-sun-sand and etc. The space organisation is resolved very creatively as a result of *thinking creatively- creative thinking* method, using different triangles on different sizes, and thus by having living spaces on their cross-sectional points, not only on plans, but also on 3rd dimension and landscape design, as well.

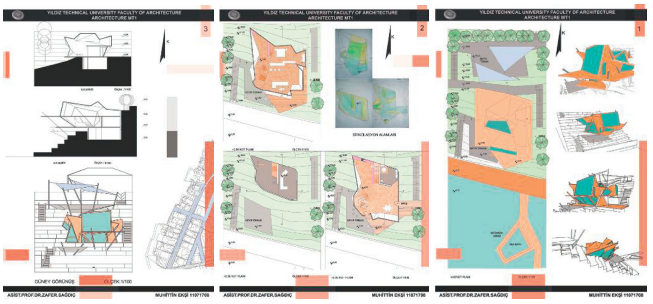

Fig.1. *A Harmony of Triangles on Our Life*, by Muhittin Eksi

2. *A Drop of Water*, by Adnan Koyuncu

The design idea is focused on a creating of a drop of water. Thus, the designer student of the project has been very much affected with the fluidity idea of Zaha Hadid[5], after taking references on his design from a painting of Kandinsky. On a ecological point of view the house design has a lightweight steel structure and thus, it gives the less harm to the ground. All of the interior design solutions and details of furnitures and landscape details are created by the same point of view, having fluidity on each and every part of the dream eco-house.

[5] Zaha Hadid is a famous architect with her contemporary architectural examples on all over the world.

Fig.2. *A Drop of Water*, by Adnan Koyuncu

3. *A Continuous Life Cycle*, by Barancan Dagistan

The design idea is related with the life-cycle of the human being, which has different stops, and thus the spaces related with them in function are created in an action-space relationship such as eat-kitchen, sleep-bedroom, stay the day long-living room, work-office room, and etc. The dream eco-house has a fluidal space usage of a daily life cycle in its' spaces and thus, its' spaces have a kind of m2 sizes according to the will and the daily usage of the owner of the house. Even the starting point of the project has a reference of painting of a Kandinsky, the facades and landscape design of the house is affected by the famous Spanish architect Gaudi's creations as artistic point of view, as well.

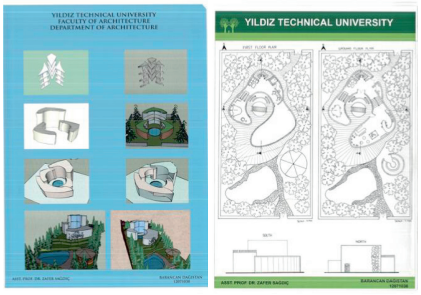

Fig.3. *A Continuous Life Cycle*, by Barancan Dagistan

6. Conclusion

Among multiple benefits of the exercise some that stand out are: (1) students participated in solving a creative design problem, (2) students learned to work on an estimated time period, (3) students familiarized themselves with creating designs on a relationship among mathematics and arts while thinking on ecology, (4) students learned to appreciate different point of views on the same project site, (5) students were able to visualize their designs in context, (6) students learned 3 important digital programs.

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